

Public Workshop 2017 Scoping Plan Update

*The Proposed Strategy for Achieving California's 2030
Greenhouse Gas Target*



October 12, 2017
Sacramento, California

Workshop Materials

Slides

<https://www.arb.ca.gov/cc/scopingplan/meetings/meetings.htm>

Outline

- ▣ Background and Process
- ▣ Recent Legislation
- ▣ Scoping Plan Analyses
- ▣ GHG and Air Quality Analyses
- ▣ Economic Refinements
- ▣ Schedule

Background and Process

Scoping Plan Background

- First Scoping Plan required by Assembly Bill 32
 - Must be updated at least every 5 years
- Initial Scoping Plan (2008) and First Update (2014)
- Executive Order B-30-15
 - Establishes GHG emissions reduction target of 40% below 1990 levels by 2030
 - Directs CARB to update Scoping Plan to incorporate 2030 GHG target
- Senate Bill 32 codifies 2030 GHG target
- AB 398 directs CARB to update Scoping Plan no later than January 1, 2018

2017 Scoping Plan Update Process

- Coordination with State agencies and Legislature since 2015
- Presentations at 5 Board Hearings
- Over 15 Public Workshops
- Over 19 Environmental Justice Advisory Committee (EJAC) Meetings and 19 EJAC Community Meetings
- Over 500 public comments received and reviewed

2017 Scoping Plan Update Objectives

- ▣ Achieve 2030 target
- ▣ Provide direct GHG emissions reductions
- ▣ Provide air quality co-benefits
- ▣ Protect public health
- ▣ Minimize emissions “leakage” – increase to non-CA GHG emissions
- ▣ Support climate investment in disadvantaged communities
- ▣ Facilitate sub-national and national collaboration
- ▣ Support cost-effective and flexible compliance
- ▣ Support Clean Power Plan and other federal action

Alternatives Considered

- ▣ No Cap-and-Trade (Prescriptive Regulations)
- ▣ Carbon Tax
- ▣ All Cap-and-Trade
- ▣ Cap and Tax

Reference for Updates

- ▣ January 2017 Draft Scoping Plan

<https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm>

- ▣ March Workshop Analyses

<https://www.arb.ca.gov/cc/scopingplan/meetings/032817/sp-march-workshop-slides.pdf>

Recent Legislation Since January 2017 Draft Scoping Plan

Recent Legislation

- July 17, 2017 Legislature passed AB 398 and AB 617
 - AB 398 provides direction on a post-2020 Cap-and-Trade Program and updates to the recent Scoping Plan Update
 - AB 617 focuses on reducing exposure to criteria and toxic pollutants in California's most burdened communities
- Initiate a new rulemaking to design a post-2020 program that conforms to the requirements in AB 398
- Work underway to implement new community-focused air quality program including monitoring and emission reduction plans

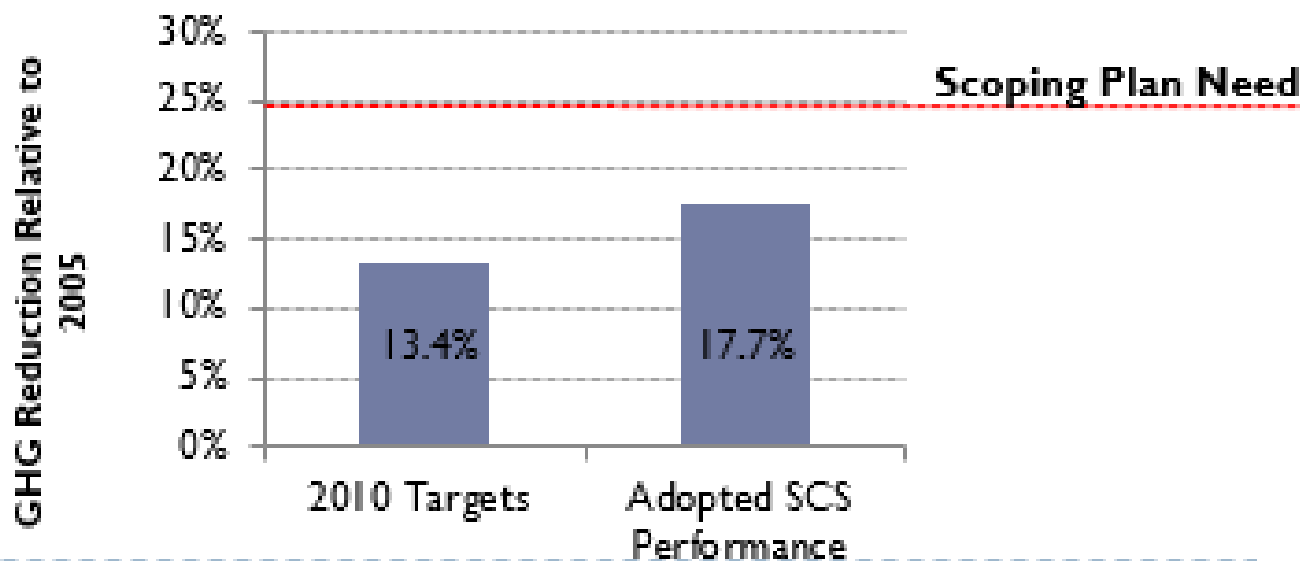
Scoping Plan Scenario

- *SB 350 - increase renewable energy and energy efficiency
- *SB 1383 - Short-Lived Climate Pollutant Plan
- *Mobile Source Strategy - help State achieve its federal and state air quality standards
- *Enhanced Low Carbon Fuel Standard
- *Sustainable Freight Action Plan
- *SB 375 – support sustainable community development
- Post-2020 Cap-and-Trade Program

*Existing commitments

SB 375 GHG Reduction Targets

- Targets advance local and regional planning and exploration of land use and transportation strategies
- To meet Scoping Plan goals, more is needed from regions
- Board considering update this November

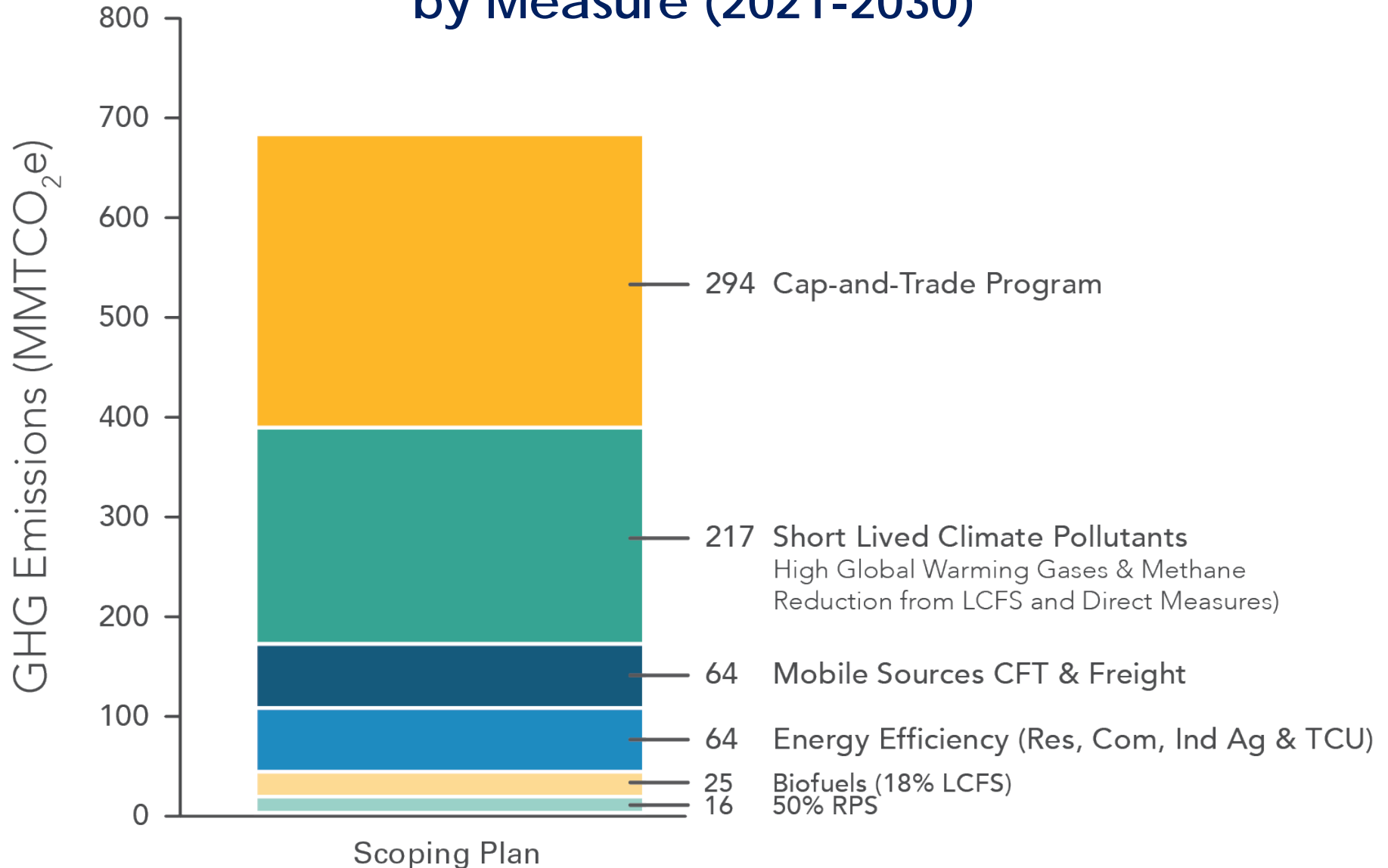


Scoping Plan Analyses

Emissions Modeling Refinements

- ▣ Refinery measure removed
- ▣ Modeling updates
 - ▣ Electricity sector updates
 - Updates to reflect RPS compliance
 - Exclusion of pumping loads from retail sales
 - Inclusion of banked RECs
 - Inclusion of out-of-state PCC3 RECs
 - ▣ Other: Motorcycle energy demand, behind-the-meter CHP, refrigeration measure

Scoping Plan – Estimated Cumulative GHG Reductions by Measure (2021-2030)



GHG Emissions by Sector in 2030

Table II-3. Estimated Change in GHG Emissions by Sector

Estimated GHGs by Sector [MMTCO₂e]

| | 1990 | 2030 Scoping Plan Ranges | % change from 1990 |
|-----------------------------------|------------|-----------------------------|-----------------------|
| Agriculture | 26 | 24–25 | -8 to -4 |
| Residential and Commercial | 44 | 38–40 | -14 to -9 |
| Electric Power | 108 | 30–52 ⁶⁸ | -72 to -52 |
| High GWP | 3 | 8–11 | 167 to 267 |
| Industrial | 98 | 83–88 | -15 to -10 |
| Recycling and Waste | 7 | 8–9 | 14 to 29** |
| Transportation (Including TCU) | 152 | 103–111 | -32 to -27 |
| Net Sink* | -7*** | TBD | TBD |
| Sub Total | 431 | 294–336 | -32 to -22 |
| Cap-and-Trade Program | n/a | 34–76 | n/a |
| Total | 431 | 260 | -40 |

Natural and Working Lands (NWL)

▣ Objectives

- ▣ Net zero or negative GHG emissions and
- ▣ Minimize, where appropriate, net GHG and black carbon emissions

▣ Goal

- ▣ Preliminary intervention-based goal for sequestering and avoiding emissions by at least 15-20 MMT CO₂e by 2030 through existing pathways and new incentives

▣ NWL Implementation Plan

- ▣ Set pathway to meet sector objectives and intervention-based goal
- ▣ First workshop on Friday October 13, 2017
- ▣ Ongoing development and feedback in 2018

Appendices

- Additional appendices since January 2017 Draft Scoping Plan
 - Alternatives Evaluation, Estimations for AB 197, and Health Impacts (presented at March 2017 workshop)
 - Major Climate Statutes and Regulations
 - Green Buildings Strategy

GHG and Air Quality Analyses

Scoping Plan: 2030 GHG and Air Quality Reductions

| Scenario | Range of GHG Reductions (MMTCO ₂)* | Range of NO _x Reductions (Tons/Day) | Range of VOC Reductions (Tons/Day) | Range of PM _{2.5} Reductions (Tons/Day) | Range of Diesel PM Reductions (Tons/Day) |
|-----------------------|--|--|------------------------------------|--|--|
| Scoping Plan Scenario | 100-184 | 48-73 | 5.1-7.3 | 1.4-2.4 | 5-12 |

- Mobile Sources measures primary drivers of benefits in air quality
 - Mobile Source Strategy, Sustainable Freight, 18% LCFS
- In 2030, Cap-and-Trade Program estimated to deliver 58-119 MMTCO₂e reductions—included in GHG range in table

Estimated Health Impacts Due to Emissions Reductions in 2030

| | Proposed Scenario (<i>annual reductions</i>) |
|-------------------------|---|
| Mortality | 140-210 |
| Hospitalizations | 20-31 |
| ER Visits | 58-88 |

- ▣ Totals include impacts of diesel particulate matter and NOx
- ▣ Individual incidents in 2030, does not include cancer risk
- ▣ Does not include impacts of Cap-and-Trade
- ▣ Estimates only account for emissions uncertainty and not health benefits model uncertainty
- ▣ Emissions from power plants are weighted to reflect reduced exposure from tall smoke stack

Additional Information

- ▣ Additional details on GHG and air quality reductions, health impacts analyses, and estimating health co-benefits presented at March 28, 2017 workshop:
 - ▣ <https://www.arb.ca.gov/cc/scopingplan/meetings/032817/sp-march-workshop-slides.pdf>

Economic Refinements

Economic Modeling

- ▣ Includes capital and fuel costs from PATHWAYS
- ▣ Impacts of carbon pricing are calculated outside of PATHWAYS
- ▣ Results include monetization of health impacts from changes in emissions of diesel particulate matter and NOx
 - ▣ Avoided premature mortality
 - ▣ Hospitalizations
 - ▣ ER visits
- ▣ Results do not include
 - ▣ Benefits of active transportation
 - ▣ Avoided environmental damages as calculated with the social cost of carbon or the social cost of methane

Direct Cost Estimates in 2030 Relative to Reference Case (Billion \$2015)

| Scenario | 2030 Stock Costs (Billion \$2015) | 2030 Fuel Costs (Billion \$2015) | 2030 Cost of Reductions due to Carbon Pricing (Billion \$2015) | 2030 Total Cost (Billion \$2015) |
|--------------------------|--------------------------------------|-------------------------------------|---|-------------------------------------|
| Scoping Plan Scenario | \$6.0 | -5.9 | \$1.6 to \$5.1 | \$1.7 to \$5.2 |

Scoping Plan: 2030 Macroeconomic Impacts

| | Absolute Change | Percentage Change |
|-------------------------------------|-------------------|-------------------|
| California GDP (Billion \$2015) | -\$9.7 to -\$19.4 | -0.3% to -0.6% |
| Employment (Thousand Jobs) | -43.4 to -81.3 | -0.2% to -0.3% |
| Personal Income (Billion \$2015) | -\$4.2 to -\$1.7 | -0.1% |

- Relative to Reference scenario in 2030
 - California GDP: \$3.4 trillion
 - Employment 23,500,000
 - Personal Income: \$3.0 trillion
- The average growth rate of State GDP, employment personal income are unchanged relative to the Reference scenario

Estimated Economic Valuation of Avoided Health Impacts Due to Emissions Reductions in 2030

| (Million \$2015) | Scoping Plan Scenario |
|------------------|-----------------------|
| Mortality | \$1,200 - \$1,810 |
| Hospitalizations | \$970 - \$ 1,500 |
| ER Visits | \$0.04 - \$0.065 |
| Total | \$1,210 – 1,810 |

- Economic Valuation includes avoided health impacts related to reductions in diesel particulate matter and NOx relative to the reference case
- Does not include carbon related disease health impacts included in the Social Cost of Carbon
- Does not include any potential benefit associated with active transportation

Regional Impact Methodology

- Disaggregate State-wide impacts to California counties
 - REMI California County model
- Estimate relative economic impact of scenarios to DACs
 - DACs identified using CalEnviroScreen 2.0
 - County employment information from American Community Survey (ACS) provides census-tract level estimates of jobs by occupation

Schedule

- November 2017: Full Final Scoping Plan
- EJAC meeting(s)
- December 14/15, 2017: Final Board consideration

Additional Information

▣ Scoping Plan

<http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm>

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